

Introduction

[HOME](#)

[HELP](#)

Diesel engines drive the World's commerce over land, rail, ocean, and inland waterways. Diesel engines are also used extensively in agriculture, construction, and mining. In most of these applications, there is not a commercially viable alternative. The challenge to the diesel engine community is to comply with increasingly more stringent diesel engine emissions standards. Diesel engines in light trucks, e.g., sport utility vehicles (SUV's), pickup trucks, and minivans, can improve fuel economy compared with the gasoline engines currently in these vehicles. These new clean diesel engines are comparable to gasoline engines for noise and acceleration with a durability potential of doubling engine life. Emissions are the potential impediment to use of diesel engines in light trucks and automobiles.

The series of Diesel Engine Emissions Reduction (DEER) Workshops was initiated to highlight and coordinate diesel engine emissions work. National laboratory scientists were invited to understand problem areas and develop possible solutions. DEER 2000, the 6th DEER Workshop, was co-sponsored by the U.S. Department of Energy's (DOE) Office of Transportation Technologies and Office of Heavy Vehicle Technologies and the California Energy Commission. DEER 2000 was held August 20-24, 2000, in San Diego, California. The primary focus was on the emerging oxides of nitrogen (NO_x) and

particulate (PM) reduction technology. Engine test data was presented that showed the need of using lower sulfur level diesel fuel to meet the very stringent Federal Tier 2, 2007 emissions standards. The session on human health effects highlighted the greater severity of nano-particles compared with the larger fine particles. An interesting session was conducted with representatives from the major environmental organizations that oppose dirty diesel engines, but could possibly accept clean diesel engines. This session featured a dialogue with the diesel engine community on points of concern. The highlight of the Workshop was the "ride and drive" of Daimler-Chrysler SUV's powered by the clean diesel engines being developed by Cummins and Detroit Diesel with DOE support. Advances in non-thermal plasma devices for NO_x or PM reduction, quantum-well thermoelectrics with a factor of 6 improvement compared with current art bulk semi-conductor thermoelectrics, and significant enhancement and understanding of combustion achieved through use of laser diagnostics were reported.